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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/199,829	11/25/1998	PATRICIA B. SMITH	TI-25250	4119
23494	7590	06/14/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			MALDONADO, JULIO J	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	

2823

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

09/199,829

Applicant(s)

SMITH ET AL.

Examiner

Julio J. Maldonado

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,6,25,28,29 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,25,28,29 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6, 25, 28, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson et al. (U.S. 4,201,579).

Robinson et al. (Figs.1-4) teach a related method to remove photoresist layer formed over a device containing a oxygen sensitive material including the steps of forming layer of a first material over a semiconductor substrate, said first material is oxygen sensitive; forming a photoresist layer over said first material; patterning said layer of said first material, thus exposing a portion of said oxygen sensitive material; removing said photoresist layer after patterning said layer of said first material using a plasma process comprising hydrogen and an inert gas such as argon or nitrogen with no oxidizing component at a temperature of 100°C to 225°C; and continue the plasma process for an over etch time of, for example, 2 minutes, to insure that all the photoresist has been removed (column 2, line 18 – column 4, line 61).

Still, Robinson et al. fail to teach performing the plasma process at a temperature of 235°C to 350°C. However, Robinson et al. teach that the reaction rate is found to increase with temperature and that the highest end of the temperature range is limited to the substrate involved (Robinson et al., column 4, lines 4 – 11). One of ordinary skill

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in the art at the time the invention was made would have been led to the recited temperatures through routine experimentation in view of the guidance related to the effect of higher temperature on particular substrates and/or the amount of adverse effects that can be tolerated. One of ordinary skill in the art at the time the invention was made would balance the time of reaction with the amount of adverse effects obtained on a substrate.

Furtherstill, Robinson et al. fail to expressly teach removing a residue on said semiconductor wafer after removing said photoresist layer using a plasma process comprising hydrogen or deuterium and substantially no oxygen component at an ambient temperature of 235°C to 350°C. However, it would have been inherent that the process described by Robinson et al. removes all of the photoresist, and any residue remaining from any impartial removal of the photoresist layer would also have been removed.

Still further, Robinson et al. fail to expressly teach wherein said hydrogen plasma passivates said oxygen sensitive material. However, the same materials are treated the same way as in the instant invention and therefore, the same results would be obtained.

### ***Response to Arguments***

3. Applicant's arguments filed 03/28/2005 have been fully considered but they are not persuasive.

Applicants argue, "...There is no teachings regarding passivation in the Robinson patent...". In response to this argument, and as mentioned above, the same materials are treated the same way and therefore the same results would be obtained.

Applicants also argue, "...The examiner states that it would be obvious that the process described in Robinson removes all of the photoresist and any residue remaining from any impartial removal of the photoresist layer would also have been removed. This statement does not describe the claimed limitations of the instant invention where a careful distinction is made between the removal of photoresist and the removal of a residue. As described on page 13, lines 1 1-14, the residue is formed by an interaction of the etch chemistry with the photoresist layer. This interaction changes the structure of the photoresist layer and forms a polymer that has a different chemical structure compared to the original photoresist layer...". In response to this argument, there is no description in the claims of any particular material used as a photoresist layer, or side product formed during the reaction between said material and the hydrogen plasma. Therefore Robinson et al. read upon the claimed invention.

#### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the customer service number for group 2800 is (703) 306-3329.

Updates can be found at <http://www.uspto.gov/web/info/2800.htm>.

Julio J. Maldonado  
Patent Examiner  
Art Unit 2823

Julio J. Maldonado  
June 6, 2005

  
George Fourson  
Primary Examiner